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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,336	06/23/2003	Maria Cristina B. Estacio	018865-005910US	8226

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EXAMINER

SMOOT, STEPHEN W


ART UNIT

PAPER NUMBER

2813

DATE MAILED: 05/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/602,336	ESTACIO ET AL. 	
	Examiner	Art Unit	
	Stephen W. Smoot	2813	

-- Th **MAILING DATE** of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9-15-03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to application papers filed on 23 June 2003.

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The specification needs to be amended to include antecedence for "an underfill application and a cure" as claimed in claims 9, 10.

Claim Objections

3. Claim 7 is objected to because of the following informality:
In claim 7, line 5, insert --device-- after "semiconductor" for proper antecedence to the semiconductor device of line 1.
Appropriate correction is required.

4. Applicant is advised that should claim 9 be found allowable, claim 10 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:
- The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
6. Claims 8-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "the gate pad" in lines 1-2;

Claim 9 recites the limitation "the solder bumps" in line 2; and

Claim 10 recites the limitation "the solder bumps" in line 2.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7, 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu (US 5,192,681) in view of Fukaya (US 5,969,411).

Referring to column 1, line 54 to column 2, line 26, Chiu discloses a method of testing semiconductor chips after they are mounted on leadframe tape. The method is applicable to reel-to-reel processing. The chips can have solder bumps for connecting to leads from the leadframe (see column 3, line 51 to column 4, line 6). The chip and leads are encapsulated with an ultraviolet transmitting gel (i.e. an underfill material) that is cured by heating (see column 3, lines 10-13). The leads are temporarily supported by a plastic frame, while the chips are tested (see column 3, lines 24-50). These are limitations set forth in claims 7, 9-10 of the applicant's invention.

However, Chiu does not teach or suggest performing a laser cut, which is a limitation set forth in claim 7 of the applicant's invention.

Fukaya teaches that a laser can be used to cut inner lead portions (see abstract).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Chiu and Fukaya in order to use laser cutting as taught by Fukaya for removing the leads from the plastic frame of Chiu. Fukaya recognizes that laser cutting is one way to separate leads from a support member (see abstract).

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu (US 5,192,681) and Fukaya (US 5,969,411) as applied to claim 7 above, and further in view of Phipps (US 5,381,105).

As shown above, the combination of Chiu and Fukaya have all of the limitations set forth in claim 7 of the applicant's invention. This combination also suggests performing the laser cutting step after strip testing (see Chiu, column 3, lines 5-8, 47-50), which is a limitation set forth in claim 8 of the applicant's invention. However, this combination lacks the step of isolating the gate pad during testing, which is also a limitation of claim 8. Phipps teaches electrically isolating a gate bonding pad while testing a semiconductor device (see column 1, line 56 to column 2, line 64).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Chiu, Fukaya, and Phipps in order to test semiconductor chips as taught by Chiu and Fukaya by isolating a gate pad as taught by Phipps. Phipps recognizes that gate isolation facilitates testing of the gate oxide rupture voltage (see column 2, lines 59-62).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mostafazadeh and Nordin et al. teach testing of packaged semiconductor chips.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen W. Smoot whose telephone number is 571-272-1698. The examiner can normally be reached on M-F (8:00am to 4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SWS

Stephen W. Smoot
Patent Examiner
Art Unit 2813